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EXAMINER	
HORNING, JOEL G	

ART UNIT	PAPER NUMBER
1792	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/538,893	KUNZ ET AL.	
	Examiner	Art Unit	
	JOEL G. HORNING	1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 September 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-34* is/are pending in the application.

4a) Of the above claim(s) *5-17,22-25,33 and 34* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,18-21 and 26-32* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *09-02-05 and 09-07-07*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

Group A, claim(s) 1-32, drawn to a process for the production of a functional layer.

Group B, claim(s) 33-34, drawn to a substrate with a functional layer produced by the process of claim 1.

The inventions listed as Groups A-B do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: the common technical feature between the different groups is a substrate having a functional layer disposed on it, however, WO-00/24527 (as literally translated in US 6548121) teaches the production of a substrate with a layer having good adhesion functionality (option “c1", col 1, line 40 through col 2 line 9). Since the common technical feature was known, it is not a special technical feature.

This application contains claims directed to more than one species of the generic invention. These species are deemed to lack unity of invention because they are not so linked as to form a single general inventive concept under PCT Rule 13.1.

The species are as follows:

Different photoinitator compounds and mixtures of compounds as found on pages 12-14 as well as in examples 1-5 of the specification.

Different functional groups as found on pages 3-7, 20 as well as in examples 1-5 of the specification.

During a telephone conversation with Ms Loggins on March 5th, 2009 a provisional election was made with traverse to prosecute the invention of group A, the photoinitiator species found in example 1 of the specification and alcohol as the functional group: which reads upon **claims 1-4, 18-21, 25-32**. Affirmation of this election must be made by applicant in replying to this Office action. Claims 5-17, 22-24 and 33-34 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

The examiner has required restriction between product and process claims. Where applicant elects claims directed to the product, and the product claims are subsequently found allowable, withdrawn process claims that depend from or otherwise require all the limitations of the allowable product claim will be considered for rejoinder. All claims directed to a nonelected process invention must require all the limitations of an allowable product claim for that process invention to be rejoined.

In the event of rejoinder, the requirement for restriction between the product claims and the rejoined process claims will be withdrawn, and the rejoined process claims will be fully examined for patentability in accordance with 37 CFR 1.104. Thus, to be allowable, the rejoined claims must meet all criteria for patentability including the

requirements of 35 U.S.C. 101, 102, 103 and 112. Until all claims to the elected product are found allowable, an otherwise proper restriction requirement between product claims and process claims may be maintained. Withdrawn process claims that are not commensurate in scope with an allowable product claim will not be rejoined. See MPEP § 821.04(b). Additionally, in order to retain the right to rejoinder in accordance with the above policy, applicant is advised that the process claims should be amended during prosecution to require the limitations of the product claims. **Failure to do so may result in a loss of the right to rejoinder**. Further, note that the prohibition against double patenting rejections of 35 U.S.C. 121 does not apply where the restriction requirement is withdrawn by the examiner before the patent issues. See MPEP § 804.01.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

1. **Claims 1-4, 18-21, 25-31** are rejected under 35 U.S.C. 103(a) as being unpatentable over Bauer et al (WO-00/24527, as literally translated in US 6548121).

The instant **claim 1** is directed towards a process for the production of a functional coating on an inorganic or organic substrate, wherein:

I. A low temperature plasma treatment, a corona discharge treatment, high energy treatment or a flame treatment is carried out on the substrate;

II. A melt, solution, suspension or emulsion of at least one photoinitiator, which may optionally include at least one ethylenically unsaturated compound, with at least one of the initiators or the unsaturated compounds containing a function-controlling group that causes the substrate to acquire desired surface properties, is/are applied to the substrate;

III. The layer is heated and/or irradiated with electromagnetic waves, the substrate thereby acquiring the desired surface properties.

Bauer et al (hereafter referred to as '121) teaches a process for producing a coating on an organic or inorganic substrate. This method comprises: a low temperature plasma treatment is carried out on the substrate ('121 step "a") and in '121 step "c1", the substrate is coated with composition comprising at least one ethylenically unsaturated monomer or oligomer and is irradiated with electromagnetic waves causing the coating to exhibit the at least the desired property of being cured (col 1, line 50 through col 2, line 8). '121 further teaches that the composition preferably comprises at least one photoinitiator for curing by UV/VIS radiation (col 17, lines 49-52).

'121 does not teach if the mixture of ethylenically unsaturated compound(s) with photoinitiator compound(s) of its step "c1" is in the form of a melt, solution, suspension or emulsion.

However, '121 does teach that the mixture can be applied by spraying (col 15, lines 20-27) and teaches that for spraying it is suitable for photoinitiators to be in the form of a melt or solution (col 22, lines 40-43)

Thus it would have been obvious to a person of ordinary skill in the art at the time of invention to place the mixture in the form of a melt or solution since it was a form known to the art to be suitable for spraying photoinitiator mixtures and would produce predictable results **(claim 1).**

2. Regarding **claims 2-4**, '121 teaches using acrylic acid **(claim 4)** as the ethylenically unsaturated compound, which has an acid group **(claim 3)**, and which is a hydrophilic group which will have an effect on the hydrophilicity of the coating **(claim 2)**.
3. Regarding **claims 18-20**, '121 teaches polyolefins (e.g. polypropylene) as desired substrates for the process (col 3, lines 12-22).
4. Regarding **claim 21**, '121 teaches using benzophenones **(claim 21)** for the photoinitiator (col 17, lines 49-65).
5. Regarding **claim 25**, '121 teaches using air as the plasma gas (col 2, lines 20-25).
6. Regarding **claims 26 and 27**, which claim different concentrations of the components of the mixtures. MPEP 2144.05 (II) states: "Generally, differences in concentration or temperature will not support the patentability of subject matter

encompassed by the prior art unless there is evidence indicating such concentration or temperature is critical. '[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation.'"

7. Regarding **claim 28**, '121 teaches adding "additives customary in the art" to the composition (col 21, lines 57-60).
8. Regarding **claim 29**, '121 teaches applying the coating to a thickness of between 1 to approximately 100 microns (col 19, lines 52-57), which is encompassed by applicant's claimed range.
9. Regarding **claim 30**, '121 teaches performing the irradiation step with UV/VIS radiation col 2, lines 5-9), and further teaches that UV/VIS radiation is to be considered between 250 nm and 450 nm (col 17, lines 52-55), which is encompassed by applicant's claimed range.
10. Regarding **claim 31**, '121 teaches irradiating the coated substrate through a mask, so only certain areas are exposed to the irradiation (col 3, lines 1-7).
11. **Claim 32** is rejected under 35 U.S.C. 103(a) as being unpatentable over Bauer et al (US 6548121) as applied to claim 1 above, and further in view of Kohler et al (US 6251963).

'121 teaches that the method is used for forming photoinitiator layers for image forming resist coatings (col 23, lines 10-16), but does not say how such images are formed by resist technology.

However, '963 further teaches that images are formed by resist technology by covering parts of the wet or dry resist layer with a photomask and then irradiating the layer with electromagnetic waves to crosslink a pattern in the resist (the UV/VIS exposure step) and removing the unexposed (not crosslinked) regions of the photoresist by using a solvent (col 21, lines 13-23).

Thus it would have been obvious to a person of ordinary skill in the art at the time of invention to modify '121 to cover the deposited structure of a photoinitiator layer and a monomer or oligomer containing layer with a photomask so that the irradiation step would only crosslink a pattern in the coating and then to remove the non-crosslinked regions of the coating (photoinitiator and monomer/oligomer) by using a solvent, in order to form an image in the coating as desired by '121. Using this method is obvious, because it was a known method for producing an image in a photoinitiator layer and would produce predictable results **(claim 32)**.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to

be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

12. **Claims 1-3, 21, 25-27, 29-32** are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-17 of U. S. Patent No. 7455891. Although the conflicting claims are not identical, they are not patentably distinct from each other because the '891 claims are sufficient to anticipate species from the markush groups in the claims: such as where the claim 4 R_6 group is a hydroxyl group (a hydrophilic alcohol group) and when the photoinitiator is a benzil ketal. Additionally, the photoinitiator compounds are in solutions (claim 6), they do have functional groups and the result is a substrate with desirable surface properties. Furthermore: MPEP 2144.05 (II) states that "Generally, differences in concentration or temperature will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration or temperature is critical. '[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation.'"

13. **Claims 4, 18-20 and 28** are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-17 of U. S. Patent No. 7455891 as applied in the double patenting rejection above further in view of WO-00/24527, as literally translated in US 6548121. Though '891 does not claim the functional groups of claim 4, the substrate of claims 18-20 or the additives of claim

28, as described in the '121 rejections of those claims, it would have been obvious to a person of ordinary skill in the art at the time of invention to perform those claimed limitations since they were known to the art to be suitable and would produce predictable results.

14. **Claims 1-3, 25-27, 29-32** are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-17 of copending Application No. 10556609. Although the conflicting claims are not identical, they are not patentably distinct from each other because the '609 claims are sufficient to anticipate species from the markush groups in the claims: such as where the claim 2 R_1 group is a hydroxyl group (a hydrophilic alcohol group). Additionally, the photoinitiator compounds are in solutions (claim 7) and do have functional groups and the result is a substrate with desirable surface properties. Furthermore: MPEP 2144.05 (II) states that "Generally, differences in concentration or temperature will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration or temperature is critical. '[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation.'"

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

15. **Claims 4, 18-21 and 28** are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-17 of copending Application No. 10556609 as applied in the double patenting rejection above further in view of WO-00/24527, as literally translated in US 6548121. Though '609 does not claim the functional groups of claim 4, the substrate of claims 18-20, the photoinitiators of claim 21 or the additives of claim 28, as described in the '121 rejections of those claims, it would have been obvious to a person of ordinary skill in the art at the time of invention to perform those claimed limitations since they were known to the art to be suitable and would produce predictable results.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

16. **Claims 1-3, 21, 25-27, 29-32** are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-17 of copending Application No. 10566741. Although the conflicting claims are not identical, they are not patentably distinct from each other because the '741 claims are sufficient to anticipate species from the markush groups in the claims in steps "a" through "c" : such as when the photoinitiator is a benzoin, which has a hydrophilic alcohol functional group. Additionally, the photoinitiator compounds are in solutions (claim 7) and do have functional groups and the result is a substrate with desirable surface properties. Furthermore: MPEP 2144.05 (II) states that "Generally, differences in concentration or temperature will not support the patentability of

subject matter encompassed by the prior art unless there is evidence indicating such concentration or temperature is critical. '[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation.'"

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

17. **Claims 4, 18-20 and 28** are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-17 of copending Application No. 10566741 as applied in the double patenting rejection above further in view of US 6548121. Though '741 does not claim the functional groups of claim 4, the substrate of claims 18-20 or the additives of claim 28, as described in the '121 rejections of those claims, it would have been obvious to a person of ordinary skill in the art at the time of invention to perform those claimed limitations since they were known to the art to be suitable and would produce predictable results.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

18. **Claims 1-3, 21, 25-27, 29-32** are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-18 of copending Application No. 10566743. Although the conflicting claims are not identical, they are not patentably distinct from each other because the '743 claims

are sufficient to anticipate species from the markush groups in the claims in steps “a” through “c” : such as when the photoinitiator is a benzoin, which has a hydrophilic alcohol functional group. Additionally, the photoinitiator compounds are in solutions (claim 7) and do have functional groups and the result is a substrate with desirable surface properties. Furthermore: MPEP 2144.05 (II) states that "Generally, differences in concentration or temperature will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration or temperature is critical. '[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation.'"

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

19. **Claims 4, 18-20 and 28** are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-18 of copending Application No. 10566743 as applied in the double patenting rejection above further in view of WO-00/24527, as literally translated in US 6548121. Though ‘743 does not claim the functional groups of claim 4, the substrate of claims 18-20 or the additives of claim 28, as described in the '121 rejections of those claims, it would have been obvious to a person of ordinary skill in the art at the time of invention to perform those claimed limitations since they were known to the art to be suitable and would produce predictable results.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

20. **Claims 1-3, 18-21, 25-32** are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-22 of copending Application No. 10/538890. Although the conflicting claims are not identical, they are not patentably distinct from each other because the '890 claims are sufficient to anticipate species from the markush groups in the claims in steps "a" through "c" such as when the photoinitiator is a benzoin, which has a hydrophilic alcohol functional group, and when the substrate is a polyolefin. Additionally, the photoinitiator compounds are in solutions and do have functional groups and the result is a substrate with desirable surface properties.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

21. **Claim 4** is provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-22 of copending Application No. 10/538890 as applied in the double patenting rejection above further in view of WO-00/24527, as literally translated in US 6548121. Though '890 does not claim the functional groups of claim 4, as described in the '121 rejections of those claims, it would have been obvious to a person of ordinary skill in the art at the time of invention to perform those claimed limitations since they were known to the art to be suitable and would produce predictable results.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

22. **Claims 1-3, 18-21, 25-32** are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-20 of copending Application No. 10/530614. Although the conflicting claims are not identical, they are not patentably distinct from each other because the '614 claims are sufficient to anticipate species from the markush groups in the claims in steps "a" through "c" : such as when the photoinitiator is a benzoin, which has a hydrophilic alcohol functional group, and when the substrate is a polyolefin. Additionally, the photoinitiator compounds are in solutions and do have functional groups and the result is a substrate with desirable surface properties. MPEP 2144.05 states: "In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists."

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

23. **Claim 4** is provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-20 of copending Application No. 10/530614 as applied in the double patenting rejection above further in view of WO-00/24527, as literally translated in US 6548121. Though '614 does not claim the functional groups of claim 4, as described in the '121 rejections of those claims, it would have been obvious to a person of ordinary skill in the art at the time of

invention to perform those claimed limitations since they were known to the art to be suitable and would produce predictable results.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Conclusion

24. No current claims are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOEL G. HORNING whose telephone number is (571) 270-5357. The examiner can normally be reached on M-F 9-5pm with alternating Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael B. Cleveland can be reached on (571)272-1418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/J. G. H./

Examiner, Art Unit 1792

/Michael Cleveland/

Supervisory Patent Examiner, Art Unit 1792